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10/594,083	09/25/2006	Saimon Otaka	101790.58258US	8070

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EXAMINER	
KHUU, HIEN DIEU THI	
ART UNIT	PAPER NUMBER
2857	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/594,083	OTAKA ET AL.	
	Examiner	Art Unit	
	CINDY HIEN-DIEU KHUU	2857	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 September 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *17-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *17,19,21 and 23* is/are allowed.

6)☒ Claim(s) *18,20,22 and 24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *25 September 2006* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Drawings Objection

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "a calculating unit", "a proportional electromagnetic valve", "an adjusting unit", "hydraulic device", "displacement adjusting device", "a displacement control signal calculating unit", "a difference calculating unit", "a correction amount calculating unit", and "a displacement control signal correction unit" must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Claim Objections

Claims 17 and 21 is objected to because of the following informality: An extra "." (claim 17, page 3, line 5; claim 21, page 8, line 21) needs to be removed. Correction is required.

Claims 17-24 are objected to because of the following informality: Limitations that are lacked of antecedent basis (i.e. claim 17, page 2, and lines 12-17; "the required displacement control pressure", "a displacement angle", "a displacement command", and "a required displacement control signal". Limitations that lack antecedent basis are claimed throughout claims 17-24. Correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 18, 20, 22, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kowatari et al. (US 6,101,456) in view of Collins et al. (US 6,671,641).

With respect to claims 18 and 22, Kowatari teaches of a displacement control method and displacement control device, comprising:

a calculating step of calculating a displacement control signal for driving a proportional electromagnetic valve based on a displacement command (column 9, lines 26-35 and figure 1; i is the displacement control signal, element 3 of figure 1 is the proportional electromagnetic valve; column 10, lines 34-40, 52-54 and see also figure 6 and 7, the tilting e is the displacement command indirectly related to displacement control signal i); and

an adjusting step of adjusting a displacement angle of a hydraulic device by driving the proportional electromagnetic valve with the displacement control signal calculated in the calculating step, and applying a displacement control pressure generated from the proportional electromagnetic valve to a displacement adjusting device (column 9, lines 26-35 and figure 1, column 10, lines 9-10 and figure 2; hydraulic pump 1 is the hydraulic device driven by proportional electromagnetic valve 3 with signal i, command pressure P is the displacement control pressure; regulator 2 is the displacement adjusting device); and

a judging step of judging whether a learning control mode is selected or a normal control mode is selected (column 11, lines 23-38, see figure 9, step 52 is the judging step), wherein

the displacement control signal is calculated in the calculating step, based on the displacement command (column 10, lines 9-10 and figure 2; the command pressure P axis of figure 2 is the required displacement control pressure; see also figure 7), referring to a reference characteristic representing a relationship between the displacement command and a required displacement control signal required for the proportional electromagnetic valve to generate a required displacement control pressure required to provide a displacement angle corresponding to the displacement command (column 10, lines 54-58, figure 6 and 7 shows the reference characteristic).

With respect to claim 24, Kowatari teaches further a construction machine, comprising a displacement control device (column 8, lines 50-63 "a working machine such as a hydraulic excavator").

With respect to claims 18 and 22, Kowatari does not teach of the calculating step further comprises when the learning control mode is selected:

detecting pressures generated from the proportional electromagnetic valve when the proportional electromagnetic valve is driven with the minimum-displacement- side control signal and the maximum-displacement-side control signal as first and second measured pressures, respectively;

calculating, based on a relationship between the minimum- displacement- side and maximum-displacement-side control signals and the first and second measured pressures, a minimum displacement control signal for causing the proportional electromagnetic valve to generate a displacement control pressure corresponding to a minimum displacement angle, and a maximum displacement control signal for causing the proportional electromagnetic valve to generate a displacement control pressure corresponding to a maximum displacement angle;

calculating a first difference between the minimum displacement control signal and the minimum-displacement-side control signal used for learning, and a second difference between the maximum displacement control signal and the maximum-displacement-side control signal used for learning;

the calculating step further comprises when the control mode is selected:

calculating a correction amount corresponding to the second difference based on the reference characteristic, the first and second differences and the displacement command,

correcting with the correction amount the displacement control signal calculated in the calculating step based on the displacement command referring to the reference characteristic, with the correction amount.

However, it is known in the art by Collins to teach of a method for calibrating hydraulic actuator with the calculating step comprising:

detecting pressures generated from the proportional electromagnetic valve when the proportional electromagnetic valve is driven with the minimum-displacement- side control signal and the maximum-displacement-side control signal as first and second measured pressures, respectively (Collins, column 4, lines 53-65; the actuator 14 being measured is the proportional electromagnetic valve, e.g., [93.33 psi] is the pressure detected with the minimum-side displacement control signal, e.g., [93.33 psi] is the first measured pressure, e.g., [84.88 psi] is the pressure detected with the maximum-side displacement control signal, e.g., [84.88 psi] is the second measured pressure; NOTE: the detected first measured pressure is perform in module assembly 26 [see column 4, lines 53-54], 93.33 is just an example arbitrary pressure

that corresponds to the minimum-side displacement control signal that is applied to the module assembly 26 [see column 4, lines 55-58]; see also column 2, lines 4-11);

calculating, based on a relationship between the minimum- displacement- side and maximum-displacement-side control signals and the first and second measured pressures, a minimum displacement control signal for causing the proportional electromagnetic valve to generate a displacement control pressure corresponding to a minimum displacement angle, and a maximum displacement control signal for causing the proportional electromagnetic valve to generate a displacement control pressure corresponding to a maximum displacement angle (Collins, column 3, lines 26-33; Collins does not explicitly disclose the min or max control signal is calculated based on the pressure, however, since the relationship is known and one would be able to calculate the signal based on the pressure);

calculating a first difference between the minimum displacement control signal and the minimum-displacement-side control signal used for learning, and a second difference between the maximum displacement control signal and the maximum-displacement-side control signal used for learning (Collins, column 4, lines 58-61; the +/-0.1 is the learn value; the first and second difference is determined in step 62).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the above calibration method as taught by Collins when the learning mode is selected such that the tolerance of the module assemblies (the Hydraulic pump control system of Kowatari) are reduced and the performance is increased (Collins, column 5, lines 14-18).

Collins teaches further:

calculating a correction amount corresponding to the second difference based on the reference characteristic, the first and second differences and the displacement command, (Collins, column 4, line 66 to column 5, line 6; the first and second differences is determined in step 62 of figure 4, and the correction amount is inherently calculated before the actuator is adjusted within the specific windows); and

correcting with the correction amount the displacement control signal calculated in the calculating step based on the displacement command referring to the reference characteristic, with the correction amount (Collins, column 4, line 66 to column 5, line 6; the specified windows is the required displacement control pressure, adjusted means correcting).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the above calibration method as taught by Collins when the control mode is selected such that the tolerance of the module assemblies (the Hydraulic pump control system of Kowatari) are reduced and the performance is increased (Collins, column 5, lines 14-18).

NOTE: Collins is silent as to using the first and second differences, the reference characteristic and the displacement command to calculate the correction amount. However, when the Collin's calibration is applied to Kowatari, it would be obvious to use the reference characteristic (Kowatari, column 10, lines 54-58, figure 6 and 7 shows the reference characteristic) that corresponds to a particular device along with the displacement command (the tilting e) because the correction value would be more reliable when the reference characteristic is used.

With respect to claim 20, Kowatari does not teach when detecting the first measured pressure, the displacement control signal is increased from a minimum displacement so as to set the minimum-displacement-side control signal for learning, for use in detection of the first measured pressure; and when detecting the second measured pressure, the displacement control signal is reduced from a maximum displacement so as to set the maximum- displacement-side control signal for learning, for use in detection of the second measured pressure.

However, it is known in the art by Collins to teach when detecting the first measured pressure, the displacement control signal is increased from a minimum displacement so as to set the minimum-displacement-side control signal for learning, for use in detection of the first measured pressure; and when detecting the second measured pressure, the displacement control signal is reduced from a maximum displacement so as to set the maximum- displacement-side control signal for learning, for use in detection of the second measured pressure (Collins, column 4, lines 53-65; the detecting of the first and second measured pressure is performed at step 60; column 1, lines 56-64, the signal is swept from min to max and from max to min).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the calibration method as taught by Collins so that every measurement value of a electromagnetic value is recorded during sweeping and such sweeping method would provided a better resolution of data which results a more accurate calibration.

Response to Arguments

Applicant's arguments filed 09/09/2010 have been fully considered but they are not persuasive.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., generating a correction characteristic representing a relationship between a correction pressure and a displacement command based on the first difference and the second difference and the minimum-side displacement corresponding to the first measured pressure and the maximum-side displacement corresponding to the second measured pressure) are not recited in the rejected claim(s) 18 and 22. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Allowable Subject Matter

Claims 17, 19, 21 and 23 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

The primary reason for the allowance of claims 17 and 21 is the inclusion of the limitations "generating a correction characteristic representing a relationship between a correction pressure and a displacement command, based on the first difference and the second difference and the minimum-side displacement corresponding to the first measured pressure and the maximum-side displacement corresponding to the second measured pressure". The prior art of record, taken alone or in combination, fails to disclose or render obvious.

Claims 19 and 23 are allowed due to their dependency on claims 17 and 21.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Fax/Telephone Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cindy D. Khuu whose telephone number is (571) 272-8585. The examiner can normally be reached on M-F, 8:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Schechter can be reached on (571) 272-2302. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/CINDY HIEN-DIEU KHUU/
Primary Examiner, Art Unit 2857
11/28/2010